

UDC 595.773.1(477)

## NEW RECORDS OF HOVERFLIES (DIPTERA, SYRPHIDAE) FROM UKRAINE. I. MILESIINI AND RHINGIINI

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### New Records of Hoverflies (Diptera, Syrphidae) from Ukraine. I. Milesiini and Rhingiini.

**Prokhorov, A. V., Popov, G. V., Zaika, M. I.** — Five species of hoverflies of the subfamily Eristalinae (tribes Milesiini and Rhingiini): *Criorhina floccosa* (Meigen, 1822), *Chalcosyrphus eunotus* (Loew, 1873), *Pocota personata* (Harris, 1780), *Cheilosia psilophthalma* Becker, 1894 and *C. reniformis* Hellén, 1930, are recorded from Ukraine for the first time. Distribution of these species is discussed and diagnoses of *Cheilosia* species are provided.

Key words: Diptera, Syrphidae, *Criorhina*, *Chalcosyrphus*, *Pocota*, *Cheilosia*, Ukraine.

### Introduction

Ukraine is the largest country of Europe (except the European Russia), and still the worst examined for many Diptera families. For instance, there is no checklist of the hoverfly species occurring in Ukraine (Speight & Castella, 2016). While compiling such a list (Popov & Prokhorov, *in prep.*), we focused on the most unexpected and interesting species found in the recent years. A series of papers containing the first records of the hoverflies from Ukraine was started with short notes (Prokhorov, Popov & Zaika, 2017; Prokhorov & Popov, 2017) and is continued here.

## Material and methods

The photographs on figures 1–11 are taken using a Canon Power Shot A 640 camera mounted on Carl Zeiss Stemi 2000 binocular microscope. The photographs on figures 12–17 were taken with Leica DFC 450 camera mounted on Leica Z16 APO (version 3.8. 0). All images are treated with Helicon Focus (version 6.0. 18) and Adobe Photoshop CS6. Photographs are prepared by A. V. Prokhorov. All specimens are deposited in the collection of the I. I. Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine, Kyiv (Ukraine). We follow the morphological terminology of Thompson & Rotheray (1998). Diagnoses are generally based on the keys by Bartsch et al. (2009) and Veen, Van (2010).

## Tribe Milesiini

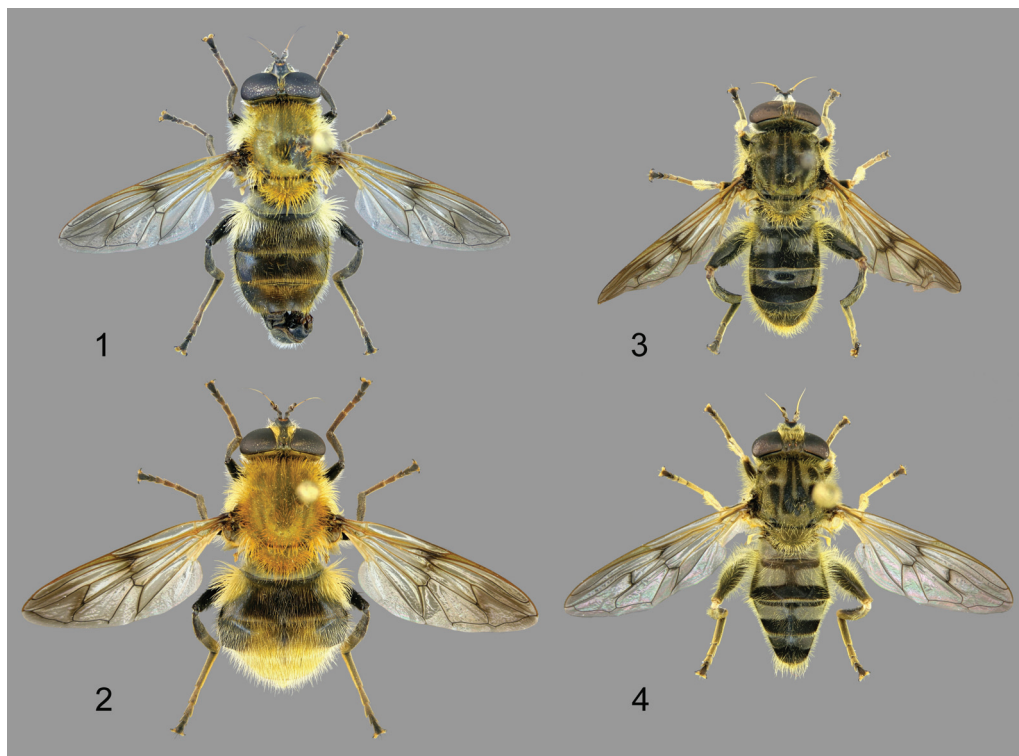
### Subtribe Criorhinina

#### *Criorhina floccosa* (Meigen, 1822) (figs 1–2)

Material examined. Ukraine: Zakarpattia Region, Kamianytsia env., Uzh River valley (left bank), 48.70 N 22.43 E, on flowers of *Crataegus* sp., 7.05.2017, 1 ♀, 9.05.2017, roads in deciduous forest, 2 ♂, 1 ♀ (A. Prokhorov); idem, 9.05.2017, roads in deciduous forest, 1 ♂, 1 ♀ (G. Popov).

Distribution: southern Sweden and Denmark south to the Pyrenees; from Ireland eastwards through central Europe (plus northern Italy, Bosnia and Herzegovina, Macedonia, Serbia, Slovakia) into European parts of Russia, Caucasus and Turkey (Stackelberg, 1970; Peck, 1988; Holinka & Mazánek, 1997; Vujić & Milankov, 1999; Saribiyik, 2009; Speight, 2016). Ukraine (**first record**). Our records extend the knowledge of the eastern boundary of this rare European species range.

Notes. The larvae of this species develop in decaying roots and in rot-holes of the deciduous trees such as *Ulmus*, *Fagus* and *Acer* (Rotheray, 1991, 1994; Bartsch et al., 2009; Speight, 2016).



Figs 1–4. Habitus of *Criorhina floccosa* (figs 1, 2) and *Chalcosyrphus eunotus* (figs 3, 4), dorsal view: 1, 3 — males, 2, 4 — females.

**Subtribe Xylotina*****Chalcosyrphus eunotus* (Loew, 1873) (figs 3–4)**

Material examined. Ukraine: Kyiv Region: Potashnia env., 50.71 N 29.73 E, Tal River floodplain, 21.05.2015, 1 ♂ (A. Prokhorov); Irpin env., 50.51 N 30.26 E, mixed forest, 11.05.2011, 1 ♂, 28.04.2012, 1 ♂ (M. Zaika); idem, mixed forest along railway, on trunk of *Quercus robur*, 11.04.2017, 1 ♀ (A. Prokhorov).

**Distribution:** Britain, Netherlands, Belgium, France, Germany, Czech Republic, Slovakia, Switzerland, Hungary, Poland, Romania; in southern Europe from northern Spain, southern France, Croatia, Macedonia, Serbia, Armenia, the Caucasus and Turkey (Holinka & Mazánek, 1997; Vujić & Milankov, 1999; Speight, 2016). Ukraine (**first record**). Our records are on the eastern border of the range of this endangered saproxylic European-Caucasian species.

**Notes.** A rare hoverfly associated with a very strict habitat niche (semi-submerged logs in woodland streams), this species is threatened in many countries in Europe (Jukes, 2010 b; Soszyńska-Maj, Soszyński & Klasa, 2009; Speight, 2016; etc.). Maibach & Goeldlin de Tiefenau (1992) reared one larva of this species from a container with wet sawdust placed beside a stream in *Fraxinus* woodland. According to other data the larvae made tunnels in the wood of the small *Alnus* and *Betula* logs partly submerged in water, on the margin of a small stream within riverine gallery woodland (Jukes, 2010 a, 2010 b, 2011; Speight, 2016). Soszyńska-Maj et al. (2009) advance the hypothesis that the increasing occurrence of *C. eunotus* in Poland is directly proportional to increasing in the number of beavers over the last 20 years.

***Pocota personata* (Harris, 1780) (fig. 5)**

Material examined. Ukraine: Kyiv Region, Kyiv (center of the city), September 2006, 1 ♀ (A. Kotenko); Irpin env., 50.51 N 30.27 E, 24.05.2011, 1 ♂ (M. Zaika); idem, road in a mixed forest, in a rot-hole of *Quercus robur*, 5.06.2016, 1 ♀ (A. Prokhorov).



Fig. 5. Female of *Pocota personata*, dorsal view.

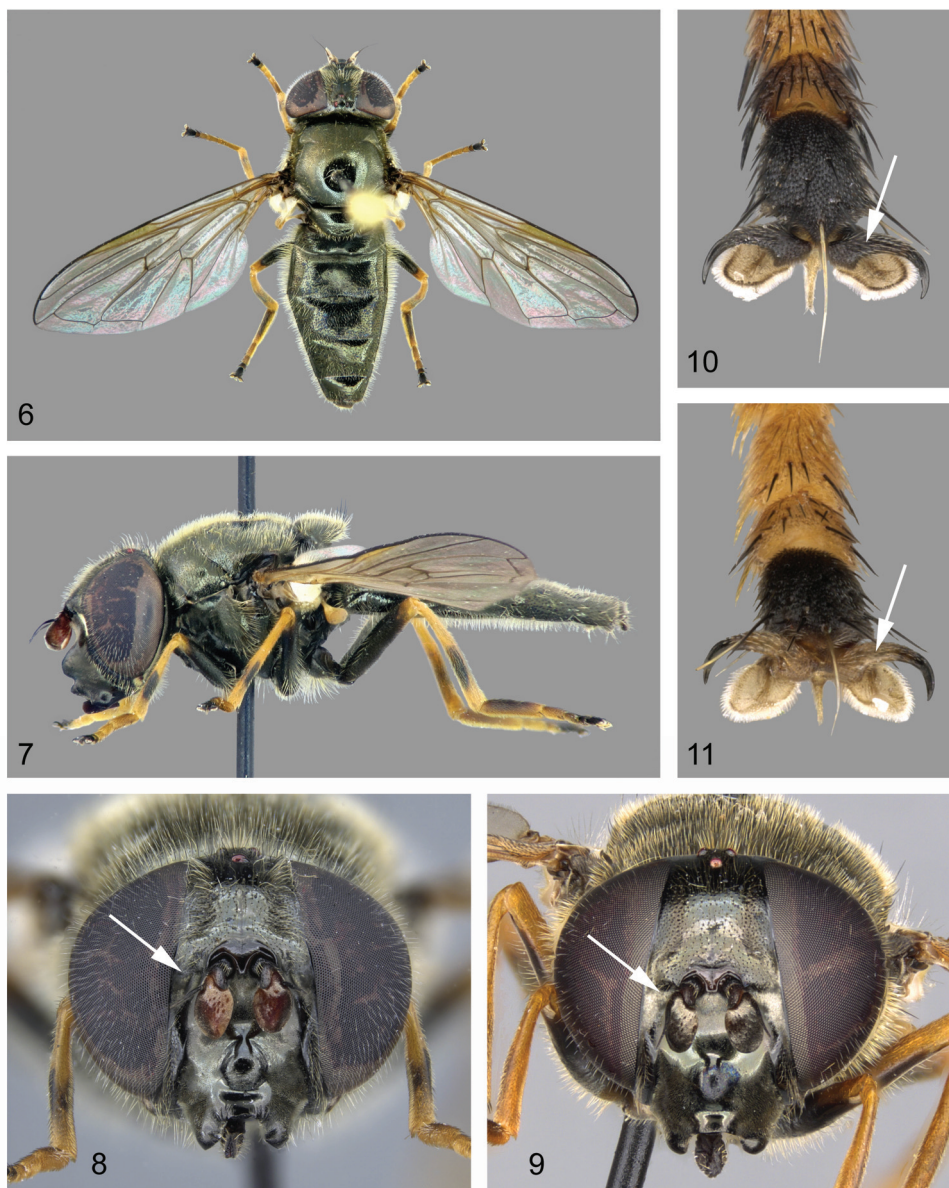
Distribution: from southern Sweden south to the Pyrenees; from Britain eastwards through central and southern Europe (Italy, Montenegro, Kosovo, Serbia, Macedonia) into European Territory of Russia and the Caucasus (Stackelberg, 1970; Peck, 1988; Holinka & Mazánek, 1997; Speight, 2013; Speight, 2016). Ukraine (**first record**). Very rare and endangered saproxylic European-Caucasian hoverfly (Speight, 2016).

### Tribe Rhingiini

#### Subtribe Cheilosini

*Cheilosia psilophthalma* Becker, 1894 (figs 6–8, 10)

Material examined. Ukraine: Kyiv Region, Irpin env., 50.51 N 30.27 E, mixed forest along the railway, 11.04.2017, 1 ♀; Khodosivka env., 50.27 N 30.50 E, Vita River valley, 5.04.2016, 1 ♀ (A. Prokhorov).



Figs 6–11. Females of *Cheilosia psilophthalma* (figs 6–8, 10) and *C. urbana* (figs 9, 11): 6 — habitus, dorsal view; 7 — habitus, lateral view; 8, 9 — head, frontal view; 10, 11 — claws of fore leg.



Distribution: from southern Norway, Sweden, southern Finland, Ireland, Britain, France (Vosges, Alps, Cevennes), Slovakia, Poland, Switzerland, Greece, Montenegro, Serbia and European Russia (Peck, 1988; Holinka & Mazánek, 1997; Speight, 2016). Ukraine (**first record**).

Diagnosis. **Female:** Head (fig. 8). Face black with facial tubercle and lower facial margin well developed (fig. 7); lateral parts of frons densely covering with whitish pile, dust spots not connected to dusting on face (fig. 8); basoflagellomere reddish, 1.5 times longer than wide, arista nearly bare; eyes entirely covered with short whitish pile (fig. 8). Thorax with short pale pile, black bristles on hind rim of scutellum present; upper and lower parts of hairs on katepisternum widely separated. Legs: femora black with small apical part pale, tibiae pale with narrow incomplete black rings below middle (fig. 7); tarsomeres 2–3 of all legs pale, 4–5 blackish, first tarsomeres of fore legs pale with dark patch on upper side, ones of mid legs pale; all claws black (fig. 10). Abdomen elongate and black, sternites 2–4 shining, tergites with short whitish pile. Differs from closely related *C. urbana* (Meigen, 1822) by black claws (pale at base in *C. urbana*, fig. 11), dust spots on frons not connected to dusting on face (connected in *C. urbana*, fig. 9), femora apex pale for a short distance (pale over considerable distance in *C. urbana*), tergite 5 mostly weakly dusted (mostly undusted in *C. urbana*) (Van Veen, 2010).

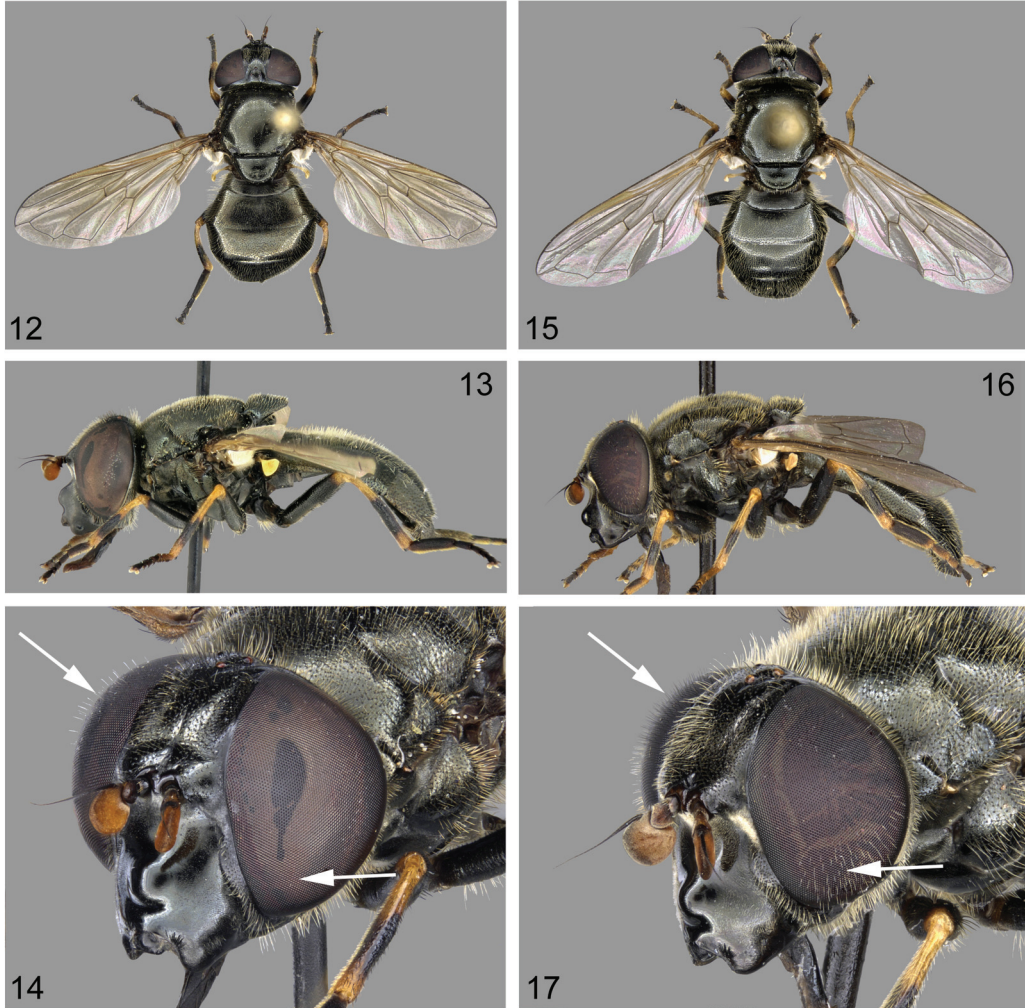
### *Cheilosia reniformis* Hellén, 1930 (figs 12–14)

Material examined. Ukraine: Zakarpattia Region, Kamianytsia env., 48.70 N 22.43 E, Uzh River valley (left bank), 6.05.2017, 1 ♀ (A. Prokhorov).

Distribution: “from Norway...; Finland; the western edge of European Russia and eastern Asiatic Russia (Yakutia) ... also to an isolated, montane, Serbian population of what may be this species, pointing out that, while genetically this population is more similar to *C. reniformis* than to other elements of the *C. vernalis* complex, it might equally represent a distinct and as yet unnamed species” (Speight, 2016). In the Catalogue of Palaearctic Syrphidae (Peck, 1988) this species was recorded for Russia only from West Siberia, but Mutin & Barkalov (1999) provided the new data on the species range in the West Palaearctic: Siberia, south of Khabarovsk Region, Amur Region, Sakha Republic (Yakutia), and Irkutsk Region. Ukraine (**first record**). Such a record of this boreal species, relic in the nemoral part of Europe, is the second since the Serbian records (Ståhls et al., 2008).

Diagnosis. **Female:** Head (fig. 14). Face black, weakly dusted and mostly shining, with facial tubercle and lower facial margin well developed (fig. 13); frons shining with short pale pile (black hairs present only before anterior ocellus), vertex shining with black hairs; basoflagellomere reddish, almost circular, arista almost bare, uniformly dark; eyes with short and very sparse whitish pile, lower part of eyes bare (fig. 14). Scutum and scutellum black and shining, with fine punctuation and short pale pile (hairs almost erect in our specimen), black bristles on hind rim of scutellum absent, but short bristles present on postalar calli; anterior anepisternum dusted, posterior anepisternum weakly dusted only at upper and posterior part, the rest is shiny; upper and lower hair spots on katepisternum widely separated; halter knob yellowish. Wing hyaline with yellowish tint and yellowish stigma. Legs: femora black with black bristles on apical half of ventral sides, its small apical part pale, tibiae pale with black rings below middle (fig. 13); tarsomeres of all legs blackish on the upper side, only basitarsus of mid legs yellowish (as the apex of the tibia). Abdomen round, as long as wide, only with pale pile, hairs in the middle of tergites are very short. Body length 7 mm.

It differs from *C. melanura* Becker, 1894 by tibiae mainly pale, hind tibia with black ring over less than half its length (in *C. melanura* tibiae mainly black, hind tibia with black ring over more than half its length), scutum and scutellum with only pale hairs (in *C. melanura* with many black hairs). From *C. chloris* (Meigen, 1822) differs by arista uniformly dark



Figs 12–17. Females of *Cheilosia reniformis* (figs 12–14) and *C. vernalis* (figs 15–17): 12, 15 — habitus, dorsal view; 13, 16 — habitus, lateral view; 14, 17 — head, anterolateral view.

(in *C. chloris* arista reddish in base), bristles on postalar calli present (in *C. chloris* bristles on postalar calli absent), body length 7–8 mm (in *C. chloris* 8–11 mm). From *C. bracusi* Vujić & Claussen, 1994 *C. reniformis* differs by hind tibia with most developed black ring and small body (in *C. bracusi* hind tibia with narrower black ring, body length 11–13 mm). Differences from *C. fraterna* in key by Van Veen (2010) indistinct, *C. reniformis* with *extremely* short hairs on thorax (*C. fraterna* with short *erect* hairs), and size of the body smaller (in *C. fraterna* 8–10 mm). By Bartsh et al. (2009), thorax of *C. reniformis* covering with *extremely* short and slightly decumbent hairs. Specimens of *C. reniformis* with bristles on hind margin of scutellum differs from *C. vernalis* (Fallén, 1817) (figs 15–17) by very short hairs (virtually hairs are absent) on lower part of eye (in *C. vernalis* hairs are uniformly length over the entirely surface of an eye, fig. 17) (Speight, 2016), and eyes with only white hairs (in *C. vernalis* upper part of eyes with dark hairs, fig. 17). As additional differences we can mention the following: in *C. reniformis* pale hairs on thorax are whitish (in *C. vernalis* they are yellowish, fig. 16), posterior anepisternum in *C. reniformis* distinctly dusted at upper and posterior part (in *C. vernalis* mostly shining).

## Conclusion

As a result of examination of material collected in Zakarpattia and Kyiv Regions, as well as analysis of all published data on Ukrainian Syrphidae, five additional species of hoverflies were found to occur in Ukraine. These records extend the distributional ranges of these species in Eastern Europe.

We are very grateful to Volodymyr Roshko (Uzhhorod National University, Uzhhorod), for his kind assistance in organizing a collecting trip to Zakarpattia Region in 2017. We also thank Valery Korneyev (Institute of Zoology of NAS of Ukraine, Kyiv) for valuable scientific and editorial comments. The authors are grateful to Alex Gumovsky (Institute of Zoology of NAS of Ukraine, Kyiv) for the opportunity to use the Leica microscope system for imaging.

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Received 27 December 2017

Accepted 9 February 2018